REMARKS

This is in response to the Office Action mailed on December 17, 2004, in which all of the pending claims (1, 2, 4-15, 17 and 18) were rejected. Specifically, according to the Office Action, claims 1, 2, 4-15, 17 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Pub. 2003/0129274 (Garwood) in view of U.S. Patent No. 5,825,037 (Nablo), claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Garwood and Nablo in view of McKeown (U.S. Patent No. 5,847,401), and claims 9-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Garwood, Nablo, and McKeown in further view of Kanter (U.S. Patent No. 4,757,201).

Independent Claim 1

Claim 1 reads as follows:

1. A bulk material irradiation system comprising:
an input for inserting bulk material;
a bulk material tube connected to the input and forming a path for bulk material flow;
a pumping assembly connected to the bulk material tube for forcing the bulk material to advance through the bulk material tube;
an irradiation assembly providing ionizing radiation that penetrates a full thickness of the bulk material to irradiate the bulk material passing adjacent to the irradiation assembly in the bulk material tube, the irradiation assembly comprising:
a source of ionizing radiation;
a conduit for providing a radiation propagation path between the source of ionizing radiation and the bulk material tube;
a foil between the conduit and the bulk material in the bulk material tube; and
a gas flow path adjacent to the foil opposite the bulk material tube for receiving a flow of gas pressurized to a level approximately equal to a level of pressurization in the bulk material tube; and
an output for irradiated bulk material to exit the bulk material tube.

Specifically, the irradiation assembly of claim 1 is recited to include a source of ionizing radiation, a conduit for providing a radiation propagation path between the source of ionizing radiation and the bulk material tube, a foil between the conduit and the bulk material in the bulk material tube, and a gas

flow path adjacent to the foil opposite the bulk material tube for receiving a flow of gas pressurized to a level approximately equal to a level of pressurization in the bulk material tube. The Examiner has attempted to supply these recited elements of claim 1 by pointing to paragraph [0128] of Garwood, which teaches a port (1622, Fig. 9) provided at the apex of a removable dome (1610) providing a port to inject gases and other substances into the pressure vessel. However, this teaching merely recites a port for injecting gas into the bulk material tube itself. **No source of ionizing radiation, conduit providing a radiation propagation path between the source of ionizing radiation and the bulk material tube, foil between the conduit and the bulk material in the bulk material tube, or gas flow path adjacent to the foil opposite the bulk material tube is disclosed by Garwood, nor are these elements suggested in any way by Garwood or any other reference of record.** In order to reject a claim under 35 U.S.C. § 103(a) as being obvious, all claim limitations must be taught or suggested by the prior art. M.P.E.P. 2143.03, citing In re Royka, 490 F.2d 981 (C.C.P.A. 1974). The limitations recited by claim 1 are not taught or suggested by Garwood, as explained above, nor by any other reference of record, and as a result the rejection of claim 1 under 35 U.S.C. § 103(a) should be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching of the gas flow path at the interface between the irradiation source and the bulk material tube opposite the tube (as recited in claim 1 as the conduit/foil/gas flow path, and disclosed int eh specification with respect to FIG. 12 at page 27, line 9 – page 29, line 7) be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Dependent Claims 2, 4, 5, 7, 8, 13 and 15

Claims 2, 4, 5, 7, 8, 13 and 15 depend from claim 1, and are allowable therewith.

Independent Claim 6

Claim 6 reads as follows:

6. A bulk material irradiation system comprising:
an input for inserting bulk material;
a plurality of bulk material tubes each offset from adjacent tubes in an alternating pattern, connected to the input and forming paths for bulk material flow;

a pumping assembly connected to the bulk material tubes for forcing the bulk material to advance through the bulk material tubes;

an irradiation assembly providing ionizing radiation that penetrates a full thickness of the bulk material to irradiate the bulk material passing adjacent to the irradiation assembly in the bulk material tubes; and

an output for irradiated bulk material to exit the bulk material tubes.

The Office Action does not point to any teaching of the prior art that discloses a plurality of bulk material tubes each offset from adjacent tubes in an alternating pattern, as recited by claim 6. This feature is disclosed in the specification with respect to FIG. 19 at page 35, line 16 – page 36, line 23. Because there is no teaching or suggestion of this explicitly recited element of claim 6 in any of the references of record, the rejection of claim 6 under 35 U.S.C. § 103(a) should be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching of the alternating offset configuration of a plurality of bulk material tubes be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Independent Claim 9

Claim 9 reads as follows:

9. A bulk material irradiation system comprising:

an input for inserting bulk material;

a bulk material tube connected to the input and forming a path for bulk material flow;

a pumping assembly connected to the bulk material tube for forcing the bulk material to advance through the bulk material tube;

an irradiation assembly providing ionizing radiation that penetrates a full thickness of the bulk material to irradiate the bulk material passing adjacent to the irradiation assembly in the bulk material tube;

an output for irradiated bulk material to exit the bulk material tube;

a dosimetry carrier entry port in the bulk material tube upstream from the irradiation assembly; and

a dosimetry carrier exit port in the bulk material tube downstream from the irradiation assembly.

The Examiner rejected claim 9 as being unpatentable over Garwood, Nablo, McKeown and Kanter. In support of this rejection, the Examiner stated that Kanter discloses a dosimetry carrier for monitoring the irradiation of bulk material, and that it therefore "would have been obvious to one of ordinary skill in the art that the ground meat irradiation apparatus and method of Garwood, Nablo and McKeown can be modified to use the dosimetry carrier of Kanter, to monitor radiation incident within the bulk volume from a number of different directions in order to provide a more accurate indication of the average radiation dose."

Claim 9 explicitly recites a dosimetry carrier entry port in the bulk material tube upstream from the irradiation assembly and a dosimetry carrier exit port in the bulk material tube downstream from the irradiation assembly. These features are disclosed in the specification with respect to FIGS. 13-15 at page 30, line 10 – page 33, line 22. **None of the references of record, including Kanter, disclose an entry port or an exit port for a dosimetry carrier**. The Examiner concedes that Garwood, Nablo and McKeown do not disclose use of a dosimetry carrier. Kanter discloses a dosimetry carrier that is apparently inserted and extracted from bulk material at the bulk material input and output location. Kanter specifically teaches that the dosimetry carrier is extracted from bulk food material after passage through the radiation region in a location such as an output hopper. See column 4, lines 8-11. Kanter does not suggest a specific dosimetry entry or exit port, as recited by claim 9. Because there is no teaching or suggestion of these explicitly recited elements of claim 9 in Kanter or any other reference of record, the rejection of claim 9 under 35 U.S.C. § 103(a) should be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching of a dosimetry carrier entry port and exit port be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Dependent Claims 10 and 11

Claims 10 and 11 depend from independent claim 9, and are allowable therewith. In addition, it is respectfully submitted that the features recited in claims 10 and 11 are also not disclosed, taught or suggested by the prior art of record, although this does not need to be specifically addressed

herein since any claim depending from a patentable independent claim is also patentable. See M.P.E.P. 2143.03, citing In re Fine, 5 U.S.P.Q.2d (BNA) 1596 (Fed. Cir. 1988).

Independent Claim 12

Claim 12 reads as follows:

12. A bulk material irradiation system comprising:
an input for inserting bulk material;
a bulk material tube connected to the input and forming a path for bulk material flow, wherein the bulk material tube is elliptical in shape and has a wall with a thickness that is thicker around edge portions of the bulk material tube than around a central portion of the bulk material tube;
a pumping assembly connected to the bulk material tube for forcing the bulk material to advance through the bulk material tube;
an irradiation assembly providing ionizing radiation that penetrates a full thickness of the bulk material to irradiate the bulk material passing adjacent to the irradiation assembly in the bulk material tube; and
an output for irradiated bulk material to exit the bulk material tube.

The Office Action does not point to any teaching of the prior art that discloses a bulk material tube that is elliptical in shape and has a wall with a thickness that is thicker around edge portions of the bulk material tube than around a central portion of the bulk material tube, as recited by claim 12. The Examiner pointed to the teaching of water cooled cavity walls in the prior art (Nablo) to reject claim 12, but this discussion does not appear to be relevant as the water cooling feature is not recited in claim 12. The bulk material tube shape and wall configuration of claim 12 are disclosed in the specification with respect to FIGS. 21-23 at page 38, line 12 – page 41, line 16. Because there is no teaching or suggestion of this explicitly recited element of claim 12 in any of the references of record, the rejection of claim 12 under 35 U.S.C. § 103(a) should be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching of the recited shape and configuration of the bulk material tube be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Independent Claim 14

Claim 14 reads as follows:

14. A bulk material irradiation system comprising:

an input for inserting bulk material;

a bulk material tube connected to the input and forming a path for bulk material flow, wherein the bulk material tube has an outer wall that is rectangular in shape and an inner wall that is elliptical in shape, a region between the outer wall and the inner wall including a liquid with an irradiation absorption characteristic that approximately matches an irradiation absorption characteristic of the bulk material in the bulk material tube;

a pumping assembly connected to the bulk material tube for forcing the bulk material to advance through the bulk material tube;

an irradiation assembly providing ionizing radiation that penetrates a full thickness of the bulk material to irradiate the bulk material passing adjacent to the irradiation assembly in the bulk material tube; and

an output for irradiated bulk material to exit the bulk material tube.

The Office Action does not point to any teaching of the prior art that discloses a bulk material tube that has an outer wall that is rectangular in shape and an inner wall that is elliptical in shape, a region between the outer wall and the inner wall including a liquid with an irradiation absorption characteristic that approximately matches an irradiation absorption characteristic of the bulk material in the bulk material tube, as recited by claim 14. The Examiner pointed to the teaching of water cooled cavity walls in the prior art (Nablo) to reject claim 14, but claim 14 recites more than simply water cooled walls, and the prior art does not disclose, teach or suggest the recited shapes and liquid characteristics of claim 14. The bulk material tube shape, configuration and liquid characteristics of claim 14 are disclosed in the specification with respect to FIG. 22 at page 39, line 18 – page 40, line 17. Because there is no teaching or suggestion of this explicitly recited element of claim 14 in any of the references of record, the rejection of claim 14 under 35 U.S.C. § 103(a) should be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching

of the recited shape, configuration, and liquid characteristics of the bulk material tube be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Independent Claim 17

Claim 17 reads as follows:

17. A fresh ground meat irradiation system comprising:
an input for inserting fresh ground meat;
a conduit connected to the input and forming a path for the ground meat to flow;
a pumping assembly connected to the conduit for forcing the ground meat to advance through the conduit;
an irradiation assembly providing ionizing radiation that penetrates a full thickness of the ground meat in the conduit to irradiate the ground meat passing adjacent to the irradiation assembly in the conduit;
an output for irradiated ground meat to exit the conduit; and
a velocity measurement system for determining an actual rate of ground meat movement through the conduit and adjusting an irradiation dose provided by the irradiation assembly based on the determined rate.

Specifically, claim 17 recites a velocity measurement system for determining an actual rate of ground meat movement through the conduit and adjusting an irradiation dose provided by the irradiation assembly based on the determined rate. The Examiner has attempted to satisfy this recitation by pointing to paragraph [0153] of Garwood, which teaches adjustment of the velocity of multiple streams of ground beef based on the measured fat contents of the streams, so that the fat content of a combined stream of ground beef is substantially constant and controlled. **There is no teaching or suggestion of adjusting an irradiation dose provided by an irradiation assembly based on a determined rate of ground meat movement, as recited by claim 17.** Because this limitation of claim 17 is not taught or suggested by Garwood, as explained above, nor by any other reference of record, the rejection of claim 17 under 35 U.S.C. § 103(a) should be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching of adjustment of irradiation dose as a function of measured velocity

of ground beef (as recited in claim 17, and disclosed in the specification, for example, at page 32, line 14 – page 33, line 1) be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Dependent Claim 18

Claim 18 depends from independent claim 17, and is allowable therewith.

CONCLUSION

In view of the foregoing, all pending claims 1, 2, 4-15, 17 and 18 are in condition for allowance. A Notice to that effect is respectfully requested. The Examiner is cordially invited to contact that undersigned at the telephone number listed below if such a call would facilitate the allowance of this application.

Respectfully submitted,

KINNEY & LANGE, P.A.

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By: _____

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